

SOUTHERN RESEARCH STATION SCIENCE AREA CHARTER		1. Title Natural Resources Inventory and Monitoring
2. Primary Research Work Unit (RWU Number, Title, Locations) SRS-4801: Forest Inventory and Analysis (Knoxville, TN; Asheville, NC; Starkville, MS; plus numerous field crew locations within the Southern U.S. and Puerto Rico)		
3. Science Area Leader William G. Burkman, Program Manager for Forest Inventory and Analysis, Knoxville, TN		
4. Area of Research Applicability Regional, national, and international	5. Estimated Duration 5 years	

+7. Description

Forests occupy 40 percent of the South's 534 million acres of total land area. These approximately 215 million acres of forests provide goods and services ranging from traditional timber products to recreational opportunities. The 13-State region of the South constitutes about 29 percent of the total forest land in the U.S., with roundwood removals from Southern forests accounting for 58 percent of the total removals in the United States. Southern forests exist in diverse conditions. The climate ranges from subtropical in southern Florida to the cool and humid slopes in the Southern Appalachian Mountains and the 60 associate forest cover types fall into 8 physiographic regions. The SRS Forest Inventory and Analysis (FIA) Program provides forest resource data, information, and research across this diverse and complex landscape.

The 13 Southern States contain 33 percent of the U.S. population and 88 percent of the forest land is in private ownership. Furthermore, the South is growing faster than the rest of the Nation, based on estimated population growth since the 2000 census. Given the large proportion of privately owned forest, population trends, and the changing timber industry land ownership, forest ownership patterns in the South are dynamic. For example, timber investment management organizations (TIMOs) and real estate investment trusts (REITs) are becoming more common as timber industry sells their lands. In addition, with the increasing population pressure, more homes are built in the wildland-urban interface (condition created as homeowners build in previously rural areas, but without the traditional tie to land that was common to farmers and forest owners previously). SRS FIA provides timely and relevant information across ownerships and conditions.

The demands placed on Southern forests are expanding and these demands are both industry based and nonindustry based. Forests in the South still provide the raw material for traditional timber products but they are also viewed as a source of renewable feedstocks for energy and biofuels. Underutilized material from harvest operations can provide the material for other bio-based products. Nonindustry based demands are also expanding. Both rural and urban forests must satisfy the recreational demands of the increasing populations. SRS FIA provides

consistent information on timber product output and can implement urban monitoring where appropriate.

Natural Resources Inventory and Monitoring (NRIM) Science Area collects, analyzes, reports information, and performs research on the status and trends of U.S. forests. FIA information is collected to estimate forest extent, forest location, forest ownership, and changes in these components. In addition, FIA data is used to estimate growth, mortality, and removals of forest vegetation. This information can be used, for example, to assess the sustainability of ecosystem management practices, to evaluate wildlife habitat conditions, and to provide supporting data for planning and decisionmaking activities by public and private enterprises. In addition, FIA uses plot-level data with related data on insects, diseases, and other types of forest damages and stressors to assess the health, condition, and potential future risks to forests.

The passage of the 1998 Farm Bill led to the development of a nationally consistent approach to forest inventory across the four regional FIA work units. This included a new national sample design, a national plot design, annual systematic measurement of a proportion of permanent plots in each State, data summaries in 6 to 12 months after the completion of the annual data collection, and State inventory reports every 5 years. In addition to these changes, measures relating to forest ecosystem function, condition, and health were added to FIA.

Within the Southern U.S., the status, condition, health, and trends of forest resources are important to State foresters, forest industries, nonindustrial private landowners, federal agencies, nongovernmental organizations, and university researchers. All of these groups are considered important clients (and in some cases cooperators) to FIA. Also, the annual inventory provided the framework to conduct the inventory in a collaborative manner with the southern State foresters and their respective forestry organizations. Due to the dynamics of forest resources in the Southern U.S., the mission of FIA is critical to assessing sustainability, strategic decision making, and forest resource management.

Mission: The National FIA program of the U.S. Forest Service has been in continuous operation since the 1930s with a mission to:

... make and keep current a comprehensive inventory and analysis of the present and prospective conditions of and requirements for the renewable resources of the forest and rangelands of the United States.

The current mission of NRIM (and SRS FIA) is:

To conduct a program of research to improve the understanding of the Southern forest ecosystems through inventories and analysis of the status and trends in resource conditions, use, productivity, and sustainability; and to conduct research to provide improved technology for timely and accurate resource inventories.

Due to the potential impacts to the forest resource in the Southern U.S., this mission is extremely

critical to decisionmaking and forest resource management.

8. Goals

The SRS FIA Program is a major component of the NRIM Science Area. A major component of FIA is production of forest inventory information in electronic and paper forms. In fact the success of FIA is judged by the timely delivery of FIA information and this requirement structures the efforts within FIA.

- Successful implementation of an annual inventory system (including traditional forest inventory and forest health measurements) in all 13 southern States, Puerto Rico, and the U.S. Virgin Islands usually in partnership with State forestry agencies.
- Development and implementation of various internal and external tools to process, summarize, and query FIA information.
- Development of various reports, documents, and presentations of FIA data summarizing the forest conditions, status, distribution, and health at various scales from sub-state to multi-state levels.
- Coordination with the other regional FIA programs to implement a nationally consistent FIA program throughout the United States.

Within the National FIA program goals have been set regarding the publicly posting of data and State 5-year reports. The target date for posting data is 6 months after the verification of the completion of the annual plots at the State level. For reporting, 5-year reports should be available 1 year after the verification of the annual plots completion at the State level.

9. Focus Areas

The NRIM Science Area focus on four areas of research and production:

1. Forest inventory and health conditions information including area of forest land, volume, components of change (growth-removals-mortality), and regeneration. Within the area of forest ecosystems function, condition, and health, FIA collects information on tree crown condition, down-woody material, soils productivity and erosion, vegetation structure and diversity, and invasive plant distribution. All of this information is critical to and used to describe forest conditions, status, distribution, and health.
2. Timber product output (TPO) studies to monitor the composition, size, and locations of the primary wood-using industry facilities; their use of roundwood (logs) by species, product, and geographic location; and its generation and disposition of mill residues. To complete the picture on TPO, logging utilization studies are conducted to characterize the sites logged, the trees cut, the products taken, and the residues left behind. This also includes nontimber forest products and biomass availability for energy.
3. Characterization of the owners of the South's forests, and to determine their ownership objectives, management practices, and future intentions for their forest property is captured through the National Woodland Owners Survey (NWOS).

4. Research into methods to improve the efficiency and effectiveness and examine additional methods for FIA data collection, processing, and reporting.

How we will address these focus areas through partnerships:

In 1998, Congress passed the Agriculture Research, Extension, and Education Reform Act. This legislation authorized significant changes in the FIA program of the U.S. Forest Service, including conversion to an annual forest inventory program; development of a core set of procedures to be implemented in a consistent fashion across all U.S. forest lands; continuously updated databases available on an annual basis; and production of complete State-level analyses at 5-year intervals. The legislation authorized the U.S. Forest Service to develop a strategic plan, in consultation with program partners and customers, detailing how these changes would be implemented over 5 years. That initial *Strategic Plan for Forest Inventory and Monitoring 1999-2003* was delivered to Congress in April 1999.

This legislation passed by Congress envisioned an FIA program that was a partnership between State forestry organizations and the U.S. Forest Service. In the course of implementing the changes, numerous consultations were held with the multitude of partners to determine what were the respective responsibilities and expectations of the different parties. Those expectations led to the definition of a Base Federal Program, which described the level of service to be provided by the U.S. Forest Service to all U.S. States and territories, regardless of their ability or willingness to participate.

The National FIA program is based on partnerships. Within the U.S. Forest Service, the FIA program exists as a partnership among three branches of the U.S. Forest Service: Research and Development, which provides the overall leadership and management of the FIA program; National Forest System (NFS) which provides funding and guidance which enable FIA to cover NFS lands and to provide information to NFS managers; and State and Private Forestry, which provides funding and guidance for assessing forest health and supporting States in the implementation of the annualized inventory.

The NFS recognizes that all NFS regions share common priorities and needs for vegetation inventory. NFS needs an inventory that meets vegetation information needs at the regional, forest, and midscale (defined as a minimum intensification of twice the density of the base grid). These data are fundamental to developing forest plans, monitoring forest plan standards and guidelines which are associated with vegetation, monitoring and management of fuels, monitoring and management of wildlife habitat including cumulative effects analysis, and also for monitoring broadscale incidence and spread of invasive species.

The National FIA program signed a Memorandum of Understanding between the National Association of State Foresters and the Chief of the U.S. Forest Service indicating the U.S. Forest Service's commitment to seeking the funding necessary for implementing the base federal FIA program. FIA and partnering States work together to address the most significant current forest resource issues and thereby maintain the usefulness and viability of the inventory program. Several universities provide technical assistance in data analysis and reporting, and in research aimed at improving National FIA program operations.

The needs of these internal and external groups help determine regional data needs, various resource analyses needs, develop new procedures to improve the inventory process, and the kind of report or output produced. Input and collaboration from partners and clients are obtained in a variety of ways including annual client meetings, data requests, special working sessions, and cooperative agreements.

SRS FIA primary partners in implementing the FIA program are State foresters and their respective forestry organizations. These groups are primarily involved in the data collection and reporting aspects of the annual inventory system. Other partners and clients include other Forest Service research programs; NFS and Forest Health Protection programs in the Southern region; other federal agencies such as the National Park Service, and Natural Resources Conservation Service; universities; environmental organizations; forest industry companies; and private landowners.

The major challenge for the NRIM science area is to make this information accessible to the other science areas and other users of FIA information as FIA information is the background for the other science areas. Some of the information is available through the National FIA program website and the National FIA program database. Data and information are available through traditional sources such as reports and publications and the FIA interactive website which allow users to query the FIA database to answer their own questions.

SRS scientists routinely work across boundaries with other U.S. Forest Service scientists and with researchers from other agencies, universities, private companies, nongovernmental organizations, and other countries.

We will also rely upon the expertise of scientists in the four other SRS science areas:

- Forest Watershed Science
- Threats to Forest Health
- Forest Values, Uses, and Policies
- Forest Ecosystem Restoration and Management

The focus of this activity is to develop joint research studies with researchers from other science areas and general users of FIA information to further extract useful information from the FIA data. Some of these research studies may lead to additional measures collected on FIA plots across the South and/or nationally.

9.1 Focus Area: Forest inventory and health information collection and reporting

The National FIA program consists of:

- A three-phase program including remote sensing/aerial information for stratification (Phase 1), a sample of ground plots measured for basic forest data (Phase 2), and a subsample of the Phase 2 sample plots measured for an extended suite of ecosystem attributes (Phase 3);

- Development of a consistent core set of field measurements collected the same manner across all U.S. forested lands;
- Annual data collection on 10% of all Phase 2 plots in the Western US and 15% of all Phase 2 plots in the Eastern U.S.;
- Compilation of all field data on an annual basis, with a target availability online within 6 months of the end of the data collection for the panel;
- Complete reports at 5-year intervals for each U.S. State;
- Special designs for interior Alaska and for Caribbean and Pacific Islands inventories.

National core measurements must be collected on all ground plots following standard data collection protocols. The national core measurements are augmented with a small number of regionally-specific measurements on inventory plots to address specific regional issues. Most regional noncore measurements are limited to those used for plot monumentation, reconciliation with past inventories, and tree quality (tree grade, tree class, damage, etc.). SRS FIA also collects data to determine the distribution of selected nonnative invasive plants, and other nontimber related information on Phase 2 plots.

As stated above, the inventory of southern forests uses a three-phase sample. In Phase 1 (remote sensing), various types of imagery are used to determine forest area in each State and determine which plots are sent to the field for measurement. In Phase 2 (field plots), a selection of the forested acres identified in Phase 1 are visited to further describe the forests. In Phase 3 (a subset of field plots), 1 out of every 16 Phase 2 field plots is visited during the summer and additional information on the forest is collected.

On all SRS FIA field plots, quantitative and qualitative measurements are collected that describe:

- Tree diameter, length, damage, amount of rotten or missing wood, and tree quality,
- Counts of tree regeneration,
- General land use,
- General stand characteristics such as forest type, stand age, and disturbance,
- Changes in land use and general stand characteristics, and
- Estimates of growth, mortality, and removals (determined by revisiting plots from the previous time period).

On the Phase 3 plots, SRS FIA collects a more extensive set of data during the summer – June, July, and August. These measures relate to forest ecosystem function, condition, and health. The current measurements collected on the Phase 3 plots can be grouped into the following categories:

- Crown Conditions – generally good crown conditions are signs of vigorous trees and poor crown conditions are symptoms of trees under stress.
- Soil Chemical Analyses – collection and analysis of soil samples that includes estimates of site fertility.
- Soil Descriptive Characteristics – such as soil texture and measurements that provide for the calculation of potential soil erosion.

- Lichen Communities – the presence or absence of certain lichen species indicates air quality and climatic changes.
- Vegetation Diversity and Structure – the composition of vegetation (species and growth forms), abundance, and spatial arrangement in the forest can be useful in describing the forest. Also, the presence of exotic and introduced plant species can be determined from the collected data.
- Down Woody Material – this measurement is useful in determining fire fuel potential and, combined with the vegetation structure data, can be used in wildlife habitat models.
- Ozone Plant Bioindicators – on a separate grid data on response of plants with known sensitivity to ozone is also collected.

Some data are collected in the office and some are collected on the plots. Some of the information is measured, some is observed, some data elements are estimated, and some information is calculated or predicted. Regardless of the source of the data, the information's quality is critical to its eventual use. To ensure quality, the FIA Unit has a quality assurance program that covers all aspects of data collection and calculation.

a. Top Priority Production, Research, and Development Needs:

- Produce comprehensive analytical reports for each State every 5 years incorporating additional forest health information.
- Examine procedures to improve the quality and efficiency of data collection on Phase 2 and Phase 3 plots.
- Use quality control and quality assurance information to improve the efficiency, quality, and effectiveness of the data collection and analysis procedures.
- Develop and implement analytical frameworks and reporting standards for Phase 1, Phase 2, and Phase 3 measurements.
- Assist National forests in the South to perform analyses of FIA data to address their specific needs.
- Conduct issue-driven resource analyses and assessments, such as storm damage, red oak borer, urbanization, fire hazard prediction, and cypress decline.
- Improve techniques and report on complex land-use change dynamics caused by fragmentation.
- Develop new tools and improve existing tools used to query FIA data for online users.
- Investigate and develop procedures to inventory non-forest areas on the FIA grid and integrate into the National FIA program; such as an urban forest inventory system, rangeland inventory systems.

b. Key Barriers to Conducting Research and Implementing Results:

- Changes in the focus of State forestry organizations may alter their interest and/or capability to be partners in data collection efforts.
- Increasing costs for field data collection staff to measure field plots may become cost-prohibitive in the future.
- Landowner characteristics and objectives are changing rapidly which may reduce access to plots on private land.

9.2 Focus Area: Timber product output and related studies

Studies of TPO are conducted in cooperation with State forestry agencies, forest industries, and professional and trade associations. SRS FIA analysts combine data from these studies with data from the extensive inventories to conduct research on timber use and its relation to inventory volume. Such research is a critical adjunct to implementation of the annual forest inventory system in the South.

Principle results of this research include estimates of biomass potential, logging residues, and removals associated with cultural practices and changes in land use. This research must be kept up-to-date to monitor changes in logging technology and silvicultural practices in the region.

These data collection efforts are supplemented with information from public records and other databases. They are the underlying basis for many statistical and analytical reports and special analyses.

a. Top Priority Production, Research, and Development Needs:

- Work with State forestry agencies to cooperatively conduct TPO surveys in a more timely and efficient manner.
- Prepare annual regional analyses of pulpwood production.
- Conduct studies of total roundwood removals from all forest lands.
- Conduct studies and report on nontimber and specialty forest products.
- Develop and maintain the data on timber products and resource use in a user-friendly database.
- Establish links between resource use estimates and removals of timber from forest land in an annual forest inventory system context.
- Analyze change between successive inventories, examining gross growth, mortality, and removals.
- Analyze and report on changes in timber utilization and harvesting methods.
- Evaluate the level of removals and mortality of trees in urban/rural land uses and develop trend data by species and land use classes.

- Characterization of the amount of woody resource available for biomass and bio-energy demands and examine the market influences that structure the use of the woody resource for biomass and bioenergy versus traditional wood utilization in the Southern United States.
 - Potential impacts from carbon sequestration opportunities will be examined. Studies would include both ecological and timber product market consequences.
- b. Key Barriers to Conducting Research and Implementing Results:
- The changing structure of the timber industry may hamper the ability to collect the necessary data in an efficient and effective manner.
 - The current lack of understanding of how bio-energy production will be developed and applied makes it difficult to develop and implement a monitoring and data collection effort to track this industry.
 - Methods to systematically track and monitor nontimber forest products are not well-defined and developed.

9.3 Focus Area: National Woodland Owners Survey

The interaction of the forest ecosystems and socioeconomic forces in the South results in an everchanging array of resource issues and questions that range from local to national in scope. Legislators and resource planners and managers at all levels rely on State, regional, and national assessments and analyses for input in making critical decisions affecting the economic and environmental well-being of all citizens of the region. Due to the long-term nature of forestry investments and commitments, it is imperative that information for these decisions be timely and accurate.

NWOS will be conducted with landowners where forested plots are measured. Surveys of landowners provide information about landowner objectives and management practices and how they change over time. This information will complement the forest inventory by providing additional characteristics about the owners, their forest land, and basic demographic information.

- a. Top Priority Production, Research, and Development Needs:
- Report on forest landowner characteristics, attitudes, and behaviors.
 - Initiate, investigate, develop, and disseminate research information about owner corporations, partnerships, clubs and other entities, including timber investment and management organizations and their associated influences and impacts on forest resources and ecosystems in the South.
 - Conduct research to understand the reasons for and consequences of trends in forest ownership, improved analytical techniques are needed to fully understand the linkages between the ownership survey and forest inventory data and other non-traditional data.

b. Key Barriers to Conducting Research and Implementing Results:

- The large numbers of private landowners in different and emerging groups complicates the ability to characterize, describe, and provide summarized output in a meaningful manner.
- The demand for forest based goods and services is rapidly evolving with changing demographics and global economies.
- An increasing Hispanic population in the Southern U.S. will need to alter the approach for NWOS data collection.

9.4 Focus Area: Forest inventory methods and tools development

This research area is divided into three vital interconnected components: remote sensing techniques, statistics and models, and expanding the use of additional measurements and techniques to increase the understanding of southern forests. Much of this research will focus on improving the efficiency, effectiveness, and utility of FIA data.

a. Top Priority Production, Research, and Development Needs:

- Develop and implement research to produce new systems, techniques, and tools that will improve the capability to rapidly map and analyze forest ecosystems.
- Conduct research that will involve contributing to the improvement of statistical methods relative to use of applicable satellite information.
- Conduct research to develop techniques and procedures for estimating forest cover and improving detection and assessment of disturbance. This will require a direct relationship to new remote sensing technologies that provide current imagery compatible with large scale inventories.
- Conduct research on procedures to capture plot- and stand-level information from remotely sensed information.
- Conduct research to develop map products depicting occurrences for risk assessment topics—such as pest infestations, fire, or other disasters.
- Develop and evaluate a compatible estimation system for the components of growth and instantaneous values for use with the annual inventory design. This will be done for both the traditional components of growth and for a discrete analog to the time invariant redefinition of the components of growth.
- Develop and evaluate the mixed estimation framework to provide insight into defining and computing the components of change. The research will determine optimal estimators for FIA population estimates.
- Research on estimators that are general enough to fully consider the location of the observation in space and time through model-based approaches that will be evaluated to assess the most efficient use of data.

- Research into small-area estimation methods for FIA data users will be conducted. These methods would allow *rope-throw* estimates by users both by reaching for FIA data outside of the lassoed area and by incorporating auxiliary data.
 - Conduct research to model the current and projected abundance and distribution of plant communities or forest trees (or habitats) which can substantially aid understanding of the distribution of plant diversity throughout the Southern United States.
 - Development of models linked to the national vegetation classification system would aid in providing a means for comparing current conditions with previous conditions, and predict future conditions.
 - Research aimed at the inventory and monitoring of rare species and rare habitats through the incorporation of adaptive sampling schemes into FIA techniques will be conducted.
 - Conduct research to examine the potential to use field data-sets to model invading exotic plant species and assess the impact to forest wildlife communities associated with southern forest ecosystems.
 - Initiate research to quantify and forecast land-use change over time and its ecological implications and influences at a finer resolution and scale which would provide additional insights about the flow of goods and services from forested ecosystems.
 - Develop new measurements and analysis techniques to address additional information needs on forest inventory and forest health issues.
- b. Key Barriers to Conducting Research and Implementing Results:
- Future forest information needs will change over time as the needs of society change, so research on new measurements and analysis techniques will need to be flexible to ensure the appropriateness of the data.
 - Rapidly changing patterns of forest land ownership and land-use change in the South make it difficult to monitor this aspect of forested patterns and processes.
 - Inability to utilize the most current technology due to the relative slow adoption and restrictions placed by the U.S. Forest Service.

10. Environmental Analysis Considerations

Proposed research activities in this science area will likely be limited in context and intensity and are not expected to have a significant effect on the quality of the human environment. However, the environmental effects of specific actions will be considered during the development of study plans, at which time the existence of extraordinary circumstances related to the proposed action, and categorical exclusion will be documented as a part of the study plan as described in FSH 1909.15, Chapter 30. Where environmental concerns exist regarding particular studies, these may be evaluated within individual study plans, or by environmental assessments or environmental impact statements prepared with and reviewed by the cooperating national forest staffs (or other federal partner, where appropriate). For research having the potential to affect a

plant or animal species that is federally listed as endangered or threatened or proposed for such listing, the unit will consult with the U.S. Fish and Wildlife Service as per Section 7 of the Endangered Species Act of 1973, as amended.

11. Science Capacity

Staffing--

NRIM includes 21 scientists (11 research scientists plus 10 other analysts and researchers) whose primary research disciplines include forestry, biometrics, ecology, statistics, economics, and silviculture. The NRIM science area research receives additional support from professional foresters and natural resource specialists (many of which are field data collection staff), data processing programmers, technicians, and administrative and clerical staff for a total of approximately 90 FTEs. NRIM receives additional support from most southern forestry agencies at approximately 120 FTEs per year primarily in the area of field data collection.

Infrastructure--

- SRS FIA headquarters is located at a facility in leased space (Knoxville, TN)
- One location on a university campus (Asheville, NC)
- One location at a federally-owned research facility (Starkville, MS)
- Field data collection and quality assurance personnel are located in various types of facilities in all 13 southern States plus Puerto Rico

Unique Capability/Instrumentation--

- Forest inventory data available in an electronic format for the Southern U.S. from the 1970s.
- Forest inventory data summary publications for the Southern U.S. from the 1930s, most of which are available in .pdf format.
- Spatial data services center in Knoxville, TN which allows users of FIA data to access actual plot coordinates for analysis without violating the Food Security Act of 1998 (which requires the U.S. Forest Service to protect landowner confidentiality).
- Access to various online tools that allow users to run queries of National FIA data to answer their own data questions.

Appendix A

Relationship of NRIM Focus Areas to Forest Service Strategic Plan and National Strategic Program Areas

NRIM Focus Areas

1. Forest inventory and health information collection and reporting
2. TPO and related studies
3. NWOS
4. Forest inventory methods and tools development

Relationship to Forest Service Strategic Objectives (numbers in parentheses refer to which of the above NRIM Focus Areas contributes to each Forest Service Strategic Objective):

- 1.1 Reduce the risk to communities and natural resources from wildfire. (1)
- 1.2 Suppress wildfires efficiently and effectively. (none)
- 1.3 Build community capacity to suppress and reduce losses from wildfires. (none)
- 1.4 Reduce the adverse impacts from invasive and native species, pests, and diseases. (1, 4)
- 1.5 Restore and maintain healthy watersheds and diverse habitats. (1)
- 2.1 The national forests provide a reliable supply of forest products over time that: 1) is consistent with achieving desired conditions on NFS lands and 2) helps maintain or create processing capacity and infrastructure in local communities. (2, 3)
- 2.2 Ensure that the national forests and grasslands provide a reliable supply of rangeland products over time that: 1) is consistent with achieving desired conditions on NFS lands and 2) helps maintain ranching in local communities. (1)
- 2.3 Help meet energy resource needs. (1, 2)
- 2.4 Promote market-based conservation and stewardship of ecosystem services. (3)
- 3.1 Protect forests and grasslands from conversion to other uses. (1, 4)
- 3.2 Assist private landowners and communities in maintaining and managing their land as sustainable forests and grasslands. (1, 2, 3, 4)
- 4.1 Improve the quality and availability of outdoor recreation experiences. (none)
- 4.2 Secure legal entry to national forest lands and waters. (none)
- 4.3 Improve the management of off-highway vehicle use. (none)
- 5.1 Improve accountability through effective strategic and land management planning and efficient use of data and technology in resource management. (1, 4)
- 5.2 Improve the administrative national forest lands and facilities in support of the agency's mission. (1)
- 6.1 Promote conservation education to increase environmental literacy through partnerships with groups that benefit and educate urban populations. (none)
- 6.2 Improve management of urban and community forests to provide a wide range of public benefits. (1, 4)
- 7.1 Increase the use of applications and tools developed by Forest Service Research and Development and the Technology Development Centers. (1, 2, 3, 4)

Relationship to Forest Service Research and Development Strategic Program Areas (numbers in parentheses refer to the NRIM Focus Areas that contribute to each Strategic Program Area):

- Wildland Fire (1, 4)
- Invasive Species (1, 4)
- Wildlife and Fish (1, 4)
- Air and Water (1, 4)
- Resource Management and Use (1, 2, 3)
- Recreation (none)
- Inventory and Monitoring (1, 2, 3, 4)
- Emerging Opportunities (1, 2, 3, 4)